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Docket No.: SMQ-082/P6396
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
John Teloh *et al.*

Application No.: 09/905436 Confirmation No.: 3431

Filed: July 13, 2001 Art Unit: 2142

For: STORAGE NETWORK DATA REPLICATOR Examiner: Hieu C. Le

APPEAL BRIEF

MS Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

As required under § 41.37(a), this brief is filed within seven months of the Notice of Appeal filed in this case on September 22, 2005, and is in furtherance of said Notice of Appeal.

The fees required under § 41.20(b)(2), and any required petition for extension of time for filing this brief and fees, are dealt with in the accompanying TRANSMITTAL OF APPEAL BRIEF.

This brief contains items under the following headings as required by 37 C.F.R. § 41.37 and M.P.E.P. § 1206:

I.	Real Party In Interest
II	Related Appeals and Interferences
III.	Status of Claims
IV.	Status of Amendments
V.	Summary of Claimed Subject Matter
VI.	Issues to be Reviewed on Appeal

I. REAL PARTY IN INTEREST

The real party in interest for this appeal is:

Sun Microsystems, Inc.

II. RELATED APPEALS AND INTERFERENCES

There are no other appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

III. STATUS OF CLAIMS

A. Total Number of Claims in Application

There are 45 claims pending in application.

B. Current Status of Claims

1. Claims pending: 1-45

2. Claims rejected: 1-45

C. Claims On Appeal

The claims on appeal are claims 1-45

IV. STATUS OF AMENDMENTS

Applicant did not file an Amendment after Final Rejection.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The claimed invention provides a solution to overcome the shortcomings of conventional data transmission connections. Such conventional connections include enterprise system connections and fiber arbitrated loops that are not able to provide the necessary long distance separation between an operational work center and the data repository to overcome regional disasters without the use of high cost of dedicated transmission mediums, such as a high-speed fiber optic cable. The claimed invention also provides a solution for compatibility issues among remote storage devices and a solution to latency issues often experienced while performing long distance data mirroring. In general, the claimed invention relates to providing a method and system enabling remote data mirroring amongst multiple remote storage devices across data transmissions paths having various transmission capabilities and remote mirroring sites operating on various operating platforms.

In one aspect of the claimed invention, the claimed invention allows data replication of a data volume from a first location to multiple remote locations on one or more remote computers. At the first location, a first data replication facility is instructed to replicate the data volume and to send the replica to multiple remote locations. In response, the data replication facility at the first location replicates the data volume and forwards the replication of the data volume to multiple remote locations stored on one or more remote computers at one or more remote locations. Transmission between the originating location and each of the remote locations occurs in a stateless manner using the TCP/IP protocol suite.

In another aspect of the claimed invention, the claimed invention allows for replicating data across multiple remote locations. Data is replicated from a first location to a first remote location. In turn, at the first remote location, the data is replicated and forwarded to a second remote location. This allows the first location to replicate data across multiple remote locations.

As defined by independent claim 1, Appellant's invention relates to a method for replicating a first data volume (100) from a first computer (16) to a plurality of remote data volumes (102, 104) stored on one or more remote computers, (18, 18') in a storage network. Performance of the method instructs a first data replication facility (20) at the first computer (16) to replicate the first data volume (100) and to send the replica to multiple remote data volumes

(102, 104). In response to the instructions, the first data replication facility (20) generates a replica of the first data volume (100) from the first computer (16) and forwards the replica from the first data replication facility (20) at the first computer to the plurality of remote data volumes (102, 104) stored on the one or more remote computers (18, 18').

Dependent claim 2 depends from independent claim 1 and further includes the step of forwarding from the first data replication facility (20) at the first computer (16) to the one or more computers (18, 18') information identifying a storage location on a storage device of the one or more computers for the replica (Page 12. lines 3-4, and Page 13, lines 14-16).

Dependent claim 3 depends from independent claim 1 and further includes the limitation of using a synchronous manner to forward the replica from the first computer forwards to the multiple remote data volumes (Figures 3, 6, 7, 9).

Dependent claim 4 depends from independent claim 1 and further includes the limitation of using an asynchronous manner to forward the replica to the plurality of remote data volumes (Figures 2, 6, 7, 9).

Dependent claim 5 depends from independent claim 1 and further includes the limitation that the communication protocol includes the Transmission Control Protocol/Internet Protocol (TCP/IP) protocol suite (page 10, lines 24-26).

Dependent claim 6 depends from independent claim 1 and further includes the limitation that the first computer and the other computers in the storage network operate without a volume manager facility (page 8, lines 27-28).

As defined by independent claim 7, Appellant's invention relates to a method performed in a computer network having computers (16, 18, 18'). Each of the computers (16, 18, 18') in the network hosts a data replication facility (20, 20', 20") for remote mirroring of data between the computers. Performance of the method allows a data replication facility (20) of a first of the computers (16) to receive a data volume (100) from the first of the computers (16) for remote

mirroring and, in turn, the data replication facility (20) replicates the data volume (100) from the first of the computers (16) to multiple other ones (18, 18') of the computers.

Dependent claim 8, depends from independent claim 7 and further includes the step of packaging data with the replicated data volume that identifies a storage location for the replicated data at each of the multiple other ones of the computers (page 12, lines 3-4, and page 13, lines 14-16).

Dependent claim 9 depends from independent claim 7 and further includes the step of replicating the data volume from the first of said computers to a plurality of volumes on a second of the computers (Figure 6 and Page 16, lines 6-10).

Dependent claim 10 depends from independent claim 7 and further includes the limitation that the communication protocol includes the Transmission Control Protocol/Internet Protocol (TCP/IP) protocol suite (page 10, lines 24-26).

Dependent claim 11 depends from independent claim 7 and further includes the limitation of using a synchronous manner to forward the replicated data from the first computer to the other ones of the computer (page 10, lines 5-6 and FIG. 2).

Dependent claim 12 depends from independent claim 7 and further includes the limitation of using an asynchronous manner to forward the replicated data from the first computer to the other ones of the computer to the plurality of remote data volumes (page 10, lines 5-6 and FIG. 2).

Dependent claim 13 depends from independent claim 7 and further includes the limitation that the data volume is a logical data volume (Page 4, lines 26-28).

Dependent claim 14 depends from independent claim 7 and further includes the limitation that the data volume is a physical data volume (Page 4, lines 26-28).

Dependent claim 15 depends from independent claim 7 and further includes the limitation that the computer network includes one of a local area network (LAN), a wide area network (WAN), a virtual private network (VPN), an intranet, an extranet and the Internet (page 4, lines 26-27).

Dependent claim 16 depends from independent claim 7 and further includes the limitation that the computers can include one of a server, a workstation, a "mainframe" and a personal computer (Page 10, line 30 to Page 11, line 1).

Dependent claim 17 depends from independent claim 7 and further includes the limitation that each of the computers in the computer network operate without a volume manager facility (page 8, lines 27-28).

As defined by independent claim 18, Appellant's invention relates to a computer readable medium holding computer executable instructions for replicating a first data volume (100) from a first computer (16) to a number of remote data volumes (102, 104) stored on one or more remote computers (18, 18') in a storage network. The method embodied on the medium includes the steps of instructing a data replication facility (20) at the first computer (16) to replicate the first data volume (100) and to send the replica to multiple remote data volumes (102, 104). In response to the instructing, the data replication facility (20) generates a replica of the first data volume (100) at the data replication facility (20) of the first computer (16) and forwarding the replicated data volume from the first computer (16) to the remote data volumes (102, 104) stored on the one or more remote computers (18, 18').

Dependent claim 19 depends from independent claim 18 and further includes the limitation of using a synchronous manner to forward the replicated data from the first computer to the multiple remote data volumes stored on the other remote computers (page 10, lines 5-6 and FIG. 2).

Dependent claim 20 depends from independent claim 18 and further includes the limitation of using an asynchronous manner to forward the replicated data from the first

computer to the multiple remote data volumes stored on the other remote computers (page 10, lines 5-6 and FIG. 2).

Dependent claim 21 depends from independent claim 18 and further includes the limitation that the communication protocol includes the Transmission Control Protocol/Internet Protocol (TCP/IP) protocol suite (page 10, lines 24-26).

As defined by independent claim 22, Appellant's invention relates to a method for performing remote data mirroring in a computer network from a first network location (12) to one or more remote network locations (14, 14'). The method includes the steps of replicating data from the first network location (12) to a first remote network location (14) of the one or more remote network locations and replicating at the first remote network location (14) of the one or more remote network locations, the replicated data from the first network location (14) to a second remote network location (14) of the one or more remote network locations to allow the first network location to perform the remote data mirroring across multiple remote network locations (Figure 9).

Dependent claim 23 depends from independent claim 22 and further includes the limitations that the computer network transmission capacity bandwidth between the first network location and the first remote network location differs from the computer network transmission bandwidth capacity between the first remote network location and the second remote network location, and the first remote network location operates as a secondary data repository to the first network location while operating as an originating location for the remote data mirroring of the replicated data to the second remote network location (Page 3, lines 25-28, Page 5, lines 15-21 and Page 6, lines 5-7).

Dependent claim 24 depends from independent claim 22 and further includes the limitation of communicating between the first network location to the first remote network location occurs in a first communications manner while communicating between the first remote network location and the second remote network location occurs in a second communications manner (Page 5, lines 15-21).

Dependent claim 25 depends from independent claim 24 and further includes the limitation of using a synchronous manner for the first communications manner (page 10, lines 5-6 and FIG. 2).

Dependent claim 26 depends from independent claim 24 and further includes the limitation of using an asynchronous manner for the first communications manner (page 10, lines 5-6 and FIG. 2).

Dependent claim 27 depends from independent claim 24 and further includes the limitation of using a synchronous manner for the second communications manner (page 10, lines 5-6 and FIG. 2).

Dependent claims 28 depends from dependent claim 24 and further includes the limitation of using an asynchronous manner for the second communications manner (page 10, lines 5-6 and FIG. 2).

Dependent claims 29 depends from independent claim 22 and further includes the limitation that the communication protocol used from the first network location to the one or more network locations occurs in the Transmission Control Protocol/Internet Protocol (TCP/IP) protocol suite (page 10, lines 24-26).

Dependent claim 30 depends from independent claim 22 and further includes the limitation that the first network location and the one or more remote network locations operate without a volume manager facility (page 8, lines 27-28).

As defined by independent claim 31, Appellant's invention relates to a method for replicating data from a first location (12) to a number of remote locations (14, 14'). The method includes the steps of replicating a selected data structure (100) at the first location (12) and transmitting the replicated data structure to a first of the remote locations (14) for replication of the replicated data structure to a second of the remote locations (14') (page 17, lines 13-15).

Dependent claim 32 depends from independent claim 31 and further includes the steps of replicating the replicated data structure at the first of the remote locations and transmitting the replication of the replicated data structure to the second of the remote locations (14') (Page 17, lines 13-15).

Dependent claim 33 depends from independent claim 31 and further includes the limitation of using the Transmission Control Protocol/Internet Protocol (TCP/IP) protocol suite for communications between the first location and the remote locations (page 10, lines 24-26).

Dependent claim 34 depends on independent claim 31 and further includes the limitation of using a first transmission rate to transmit the replicated data structure to the first of the remote locations (Page 17, lines 19-21).

Dependent claim 35 depends on dependent claim 32 and further includes the limitation of using a second transmission rate to transmit the replication of the replicated data structure from the first on the remote locations to the second of the remote locations (Page 17, lines 19-21).

Dependent claim 36 depends on independent claim 31 and further includes the limitation that the first location includes a workstation executing a first operating system (Page 17, line 13-15).

Dependent claim 37 depends on independent claim 31 and further includes the limitation that the first of the remote locations includes a server executing a second operating system (Page 17, lines 15-19).

Dependent claim 38 depends on independent claim 31 and further includes the limitation that the first location and the remote locations operate without a volume manager facility (page 8, lines 27-28).

As defined by independent claim 39, Appellant's invention relates to a computer readable medium holding computer executable instructions for replicating data from a first location (12) to a plurality of remote locations (14, 14'). Execution of the instructions by a

computer (16) causes replication of a first data structure (100) at the first location (14) and forwarding of the replicated first data structure to a first of the remote locations (14) for replication of the replicated first data structure to a second of the remote locations (14').

Dependent claim 40 depends on independent claim 39 and further includes the steps of replicating the replicated first data structure at the first of the plurality of remote locations (14) and forwarding the replication of the replicated first data structure to the second of the remote locations (14') (Page 17, lines 13-15).

Dependent claim 41 depends on independent claim 39 and further includes the limitation that the communication protocol used between the first location and the remote locations includes the Transmission Control Protocol/Internet Protocol (TCP/IP) protocol suite (page 10, lines 24-26).

Dependent claim 42 depends on independent claim 39 and further includes the limitation that a first transmission rate is used to forward the replicated first data structure to the first of the remote locations (Page 17, lines 19-21).

Dependent claim 43 depends on independent claim 40 and further includes the limitation that a second transmission rate is used to forward the replication of the replicated first data structure from the first of the remote locations to the second of the remote locations (page 17, lines 19-21).

Dependent claim 44 depends on independent claim 39 and further includes the limitation that the first location includes a workstation executing a first operating system (Page 17, lines 13-15).

Dependent claim 45 depends on independent claim 39 and further includes the limitation that the first of the remote locations includes a server executing a second operating system (page 17, lines 15-19).

VI. ISSUES TO BE REVIEWED ON APPEAL

Claims 1-4, 6, 7, 9, 11-15, 17-20, 22, 24-28, 30-32, and 38-40 are rejected under U.S.C. §102(e) as being anticipated by United States Patent No. 6,629,264 to Sicola et al. ("Sicola").

Claims 5, 10, 16, 23, 29, 33-37 and 41-45 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Sicola in view of U.S. patent no. 6,718,347 of Wilson (hereinafter "Wilson").

Claim 8 is rejected under U.S.C. §103(a) as being unpatentable over Sicola in view of United States Patent No. 6,209,002 B1 to Gagne et al.("Gagne").

VII. ARGUMENT

A. Rejection of claims 1-4, 6, 7, 9, 11-15, 17-20, 22, 24-28, 30-32, and 38-40 under U.S.C. §102(e)

Claims 1-4, 6, 7, 9, 11-15, 17-20, 22, 24-28, 30-32, and 38-40 are rejected as anticipated by Sicola. Appellant respectfully submits that the Examiner has failed to establish a prima facie case of anticipation.

To establish a prima facie case of anticipation, each and every element and limitation of the present invention must be disclosed expressly or inherently in a single prior art reference. *RCA Corp. v. Applied Digital Data Sys., Inc.*, 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir. 1984). Independent claims 1, 7, 18, 22, 31 and 39 require the elements of replicating data at a first network location and forwarding the replica to multiple data volumes held at one or more remote network locations. Sicola fails to disclose such features.

Sicola discusses a data replication system having a redundant configuration including dual Fiber Channel fabric links interconnecting each of the components of two data storage sites. Each of the data storage site comprises a host computer and associated data storage array, with redundant array controllers and adapters. Each array controller is capable of performing all of the data replication functions and each host sees remote data as if it were local. The array controllers perform a command and data logging function which stores all host write commands and data missed by the backup storage array during a situation wherein the links between the

sties are down, the remote site is down, or where a site failover to the remote site has occurred (see col. 3 lines 2 -18).

Sicola discusses pairing of volumes on a local array with those on a remote array, and the combination of volumes is called a remote copy set (see col. 6 lines 45-49). However, a remote copy set contains data that are physically in two arrays, a local array and a remote array, that reside on two different storage device. An example of this is shown in LUN 110 and LUN 110' in Fig. 1 (see col. 6, lines 49-52). The Examiner suggested in the first Office Action mailed on December 22, 2004, that Sicola teaches the limitation of instructing the first data replication facility at the first computer to replicate the first data volume and to send the replica to multiple remote data volumes at col. 20, lines 38-55.

In the Response to first Office Action, Appellant argued that Sicola does not replicate data at a first host and forward the replicated data to multiple remote data volumes on one or more remote computers. The cited passage discusses the implementation of "association sets." Sicola defines an association set as a group of logical units (a set of one or more remote copy sets) on a local or remote pair of host controllers. *See*, column 19, lines 58 – 60 of Sicola. The phrase "remote copy set" is defined and discussed in Figure 4 and the text related thereto. A "remote copy set" includes a pair of same-sized volumes, one on the local array and one on the remote array. *See,* column 8, lines 51 – 57 of Sicola. In other words, the information grouped in the association set requires the inclusion of information from the remote location. An example of this may be seen in the logical units 410 and 410' and Figure 4 of Sicola. More specifically, Sicola groups logical units (LUNs) between two remotely separated pairs of array controllers connected by redundant links. In this manner, if a primary controller serving associated LUNs fails, the set of LUNs in the association set fail over together to the secondary controller or vice versa. Which is highly consistent with the teachings of Sicola because from each array controller's point of view, an association set is the grouping of remote copy sets that all transition to the same state at the same time. Sicola further discloses all members of an association set must be on the same controller to enforce cache coherency. When members are added to an association set, they are moved to reside on the same controller, and will failover together. That is, if a local primary controller fails, the association sets associated with the local primary controller move to the local secondary or redundant controller to maintain operation of the

system. Therefore, an association set consists of pairs of volumes formed by a local volume and a remote volume located on a single local target or a single remote target, whereas in the claimed invention, a first data volume is replicated and the replica is sent to multiple remote data volumes. Moreover, as defined by Sicola, a "remote copy set" includes a pair of same-sized volumes, one on the local array and one on the remote array. As such, Sicola does not disclose replicating data at a first data replication facility of a first computer to send the replica to *multiple* remote data volumes on one or more remote computers. Sicola is concerned with one-to-one replication whereas Appellant's inventions are concerned with one-to-many replication.

In the Final Office Action mailed on July 12, 2005, and the subsequent Advisory Action mailed on August 10, 2005, the Examiner maintained his rejection of independent claims 1, 7, 18, 22, 31 and 39 under 35 U.S.C. §102(e). The Examiner's response to Appellant's arguments as stated above in response to the first Office Action was that the arguments have been considered, but they are not deemed persuasive because we did not cite the sections of Sicola that teach association sets and association set failover and cites at column 6, lines 1, of Sicola as teaching the remote copy set is a pair of same data and cites at column 8, lines 51-57, and column 9, lines 1-6 of Sicola as teaching replicating data to multiple remote data volumes.

In the Response to the Final Office Action, Appellant argued that Sicola does not disclose the step of replicating as suggested by the Examiner in col. 20, lines 38-55. Instead, the cited section discusses the implementation of "association sets." Appellant pointed out in this Response again that Sicola defines an association set as a group of logical units (a set of one more remote copy sets) on a local or remote pair of array controllers at col. 19, lines 58-60 and that the term "remote copy set" is defined as comprising a pair of same-sized volumes, one on the local array, and one on the remote array in col. 8, lines 55-57. An example was given as can be seen in logical units 410 and 410' in Figure 4 in Sicola. Appellant explained that therefore, an associate set consists of pairs of volumes on the same sites and Sicola is not concerned with replicating data to multiple data volumes on one or more remote hosts.

In both Office Actions, the Examiner suggested Sicola teaches replicating data to multiple data volumes on one or more computers (i.e., one-to-many replication operation). However, Sicola teaches replication between two like sized data volumes (i.e., a one-to-one

replication operation). Moreover, Appellant respectfully submit that given the definition of association set by Sicola teaches Sicola is not concerned with replicating a data volume and sending the replicated data volume to multiple data volumes on one or more remote locations in the network. Therefore, Appellant respectfully submits that Sicola does not anticipate independent claims 1, 7, 18, 22, 31 and 39 and their dependent claims, 2-4, 6, 9, 11-15, 17, 19-20, 24-28, 30, 32, 38 and 40.

Accordingly, Appellant respectfully requests that the Board to reverse the Examiner's final rejection of claims 1-4, 6, 7, 9, 11-15, 17-20, 22, 24-28, 30-32, and 38-40 under U.S.C. §102(e).

B. Rejection of claims 5, 10, 16, 23, 29, 33-37 and 41-45 under U.S.C. §103(a)

Claims 5, 10, 16, 23, 29, 33-37 and 41-45 are rejected under 35 U.S.C. §103(a) as obvious over Sicola in view of Wilson. Appellant respectfully submits that the rejection of these claims was improper.

To establish a prima facie case of obviousness with respect to a claim, it is necessary that the prior art references, either alone or in combination, teach or suggest each and every limitation of the rejected claims. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). Claims 5, 10, 16, 23, 29, 33-37 and 41-45 depend from one of the independent claims 1, 7, 22, 31 and 39 and include all the limitations of their corresponding independent claims. As set forth above, Sicola does not disclose the element of replicating data from a first network location to multiple data volumes held at one or more other network locations as required by independent claims 1, 7, 22, 31 and 39.

In the first Office Action, claims 5, 11, 17, 19, 30, and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sicola in view of Wilson. In response to the first Office Action, Appellant argued that Wilson patent was not cited for teaching or suggesting the idea of replicating data at a first network location and sending the replica from the first network location to multiple remote data volumes stored on one or more remote network locations. Appellant further argued that claims 5, 11, 17, 19, 30, and 42 are patentable for the same reasons as their independent claims 1, 7, 22, 31 and 39.

The Examiner maintained his rejection in the final Office Action. Appellant argued in the response to the final Office Action that since both Sicola and Wilson does not disclose the idea of replicating data at a first network location and sending the replica from the first network location to multiple remote data volumes stored on one or more remote network locations, the rejection should be withdrawn and the Appellant requested the Examiner to reconsider and withdraw the rejections of claims 5, 11, 17, 19, 30, and 42.

Wilson fails to teach or suggest this element of replicating data at a first network location and sending the replica from the first network location to multiple remote data volumes stored on one or more remote network locations. Wilson suggests the communication protocol between network locations comprises the TCP/IP suite of protocols. Wilson therefore does not teach or suggest replicating data at a first network location and sending the replica from the first network location to multiple remote data volumes stored on one or more remote network locations.

Accordingly, Appellant respectfully requests that the Board reverse the Examiner's final rejection of claims 5, 11, 17, 19, 30, and 42 under 35 U.S.C. §103(a).

C. Rejection of claim 8 under 35 U.S.C. §103(a)

Claim 8 is rejected as obvious over Sicola in view of Gagne. Appellant respectfully request reversal of this rejection.

Claim 8 depends from independent claim 1 and includes all the limitations of independent claim 7. As set forth above, Sicola does not disclose the element of replicating data at a first network location and sending the replica from the first network location to multiple remote data volumes stored on one or more remote network locations as required by independent claim 7.

In the first Office Action, claim 8 was rejected under 35 U.S.C. §103(a) as being unpatentable over Sicola in view of Gagne. In response to the first Office Action, Appellant argued that claim 8 is patentable for the same reasons as independent claim 7. Appellant further argued that Sicola does not disclose each and every limitation of independent claim 7 and the

Gagne patent does not bridge the factual deficiencies of the Sicola patent. Therefore, Appellant concluded that the allowance of claim 7 was in order.

In the final Office Action, the Examiner maintained his rejection. In response to the final Office Action, Appellant argued that Gagne was cited by the Examiner as teaching the packaging with the replica selected data information that identifies a storage location for the replica at each of the multiple other computers. Appellant further argued that Gagne does not teach or suggest the missing limitations in independent claim 7 upon which claim 8 is dependent. Appellant concluded that since the combination of references fails to teach or suggest all of the claimed elements of claim 7 Appellant requested the rejections be withdrawn.

Gagne fails to teach or suggest this element of replicating data at a first network location and sending the replica from the first network location to multiple remote data volumes stored on one or more remote network locations. Gagne discusses a method and apparatus for providing redundant data storage at remote storage facilities in an economical way. Gagne also discusses transferring data from one site to another on a track-by-track basis. However, nowhere does Gagne discuss how replicate data at a first network location and sending the replica from the first network location to multiple remote data volumes stored on one or more remote network locations.

Accordingly, Appellant respectfully submits that Sicola in combination with Gagne does not teach or suggest each and every limitation of independent claim 7 on which claim 8 depends. Therefore, Appellant respectfully submits that Sicola and Gagne fail to teach or suggest each and every element of claim 8. Accordingly, Appellant respectfully requests that the Board to reverse the Examiner's final rejection of claim 8.

VIII. CLAIMS

A copy of the claims involved in the present appeal is attached hereto as Appendix A.

IX. EVIDENCE

No evidence pursuant to §§ 1.130, 1.131, or 1.132 or entered by or relied upon by the examiner is being submitted.

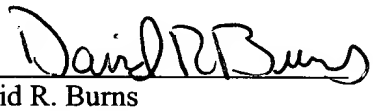
X. RELATED PROCEEDINGS

No related proceedings are referenced in II. above, or copies of decisions in related proceedings are not provided, hence no Appendix is included.

Applicant believes no fee is due with this statement. However, if a fee is due, please charge our Deposit Account No. 12-0080, under Order No. SMQ-082 from which the undersigned is authorized to draw.

Dated: April 24, 2006

Respectfully submitted,

By 

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APPENDIX A

Claims Involved in the Appeal of Application Serial No. 09/905436

1. In a storage network, a method for replicating a first data volume from a first computer to a plurality of remote data volumes stored on one or more remote computers, said method comprising the steps of:

instructing a first data replication facility at said first computer to replicate said first data volume and to send the replica to multiple remote data volumes;

in response to the instructing, generating a replica of said first data volume from said first computer at said first data replication facility; and

forwarding said replica from said first data replication facility at said first computer said to said plurality of remote data volumes stored on said one or more remote computers.

2. The method of claim 1, further comprising the steps of forwarding from said first data replication facility at said first computer to said one or more computers information identifying a storage location on a storage device of said one or more computers for said replica.

3. The method of claim 1, wherein said first computer forwards said replica to said plurality of remote data volumes in a synchronous manner.

4. The method of claim 1, wherein said first computer forwards said replica to said plurality of remote data volumes in an asynchronous manner.

5. The method of claim 1, wherein said communication protocol comprises the Transmission Control Protocol/Internet Protocol (TCP/IP) protocol suite.

6. The method of claim 1, wherein said first computer and said one or more computers in said storage network operate without a volume manager facility.

7. In a computer network having computers, wherein each of said computers in the network hosts a data replication facility for remote mirroring of data between said computers, a method comprising the steps of:

receiving a data volume at said data replication facility of a first of said computers from said first of said computers for said remote mirroring; and

replicating said data volume from said first of said computers to multiple other ones of the computers.

8. The method of claim 7, further comprising the step of packaging data with said replicated data volume that identifies a storage location for said replicated data at each of said multiple other ones of the computers.

9. The method of claim 7 further comprising the step of, replicating said data volume from said first of said computers to a plurality of volumes on a second of said computers.

10. The method of claim 7, wherein said communication protocol comprises Transport Control Protocol/Internet Protocol (TCP/IP) protocol suite.

11. The method of claim 7, wherein said replicating said data volume from said first of said computers to each of said multiple other computers occurs in a synchronous manner.

12. The method of claim 7, wherein said replicating said data volume from said first of said computers to each of said multiple other computers occurs in an asynchronous manner.

13. The method of claim 7, wherein said data volume is a logical data volume.

14. The method of claim 7, wherein said data volume is a physical data volume.

15. The method of claim 7, wherein said computer network comprises one of a local area network (LAN), a wide area network (WAN), a virtual private network (VPN), an intranet, an extranet and the Internet.

16. The method of claim 7, wherein said computers comprises one of a server, a workstation, a "mainframe" and a personal computer.

17. The method of claim 7, each of said computers in said network operate without a volume management facility.

18. A computer readable medium holding computer executable instructions for replicating a first data volume from a first computer to a plurality of remote data volumes stored on one or more remote computers in a storage network comprising the steps of:

instructing a data replication facility at said first computer to replicate said first data volume and to send the replica to multiple remote data volumes;

in response to the instructing, generating a replica of said first data volume at said data replication facility of said first computer; and

forwarding said replicated data volume from said first computer to said plurality of remote data volumes stored on said one or more remote computers.

19. The computer readable medium of claim 18, wherein said first computer forwards said replicated data volume to said plurality of remote data volumes stored on said one or more of said remote computers in a synchronous manner.

20. The computer readable medium of claim 18, wherein said first computer forwards said replicated data volume to said plurality of remote data volumes on the one or more remote computers in an asynchronous manner.

21. The computer readable medium of claim 18, wherein said communication protocol comprises the Transmission Control Protocol/Internet Protocol (TCP/IP) protocol suite.

22. In a computer network capable of performing remote data mirroring from a first network location to one or more remote network locations, a method of performing said remote data mirroring, said method comprising the steps of:

replicating data from said first network location to a first remote network location of said one or more remote network locations; and

replicating at said first remote network location of said one or more remote network locations, said replicated data from said first network location to a second remote network location of said one or more remote network locations to allow said first network location to perform said remote data mirroring across multiple remote network locations.

23. The method of claim 22, wherein said computer network transmission capacity bandwidth between said first network location and said first remote network location differs from said computer network transmission bandwidth capacity between said first remote network location and said second remote network location, wherein said first remote network location operates as a secondary data repository to said first network location while operating as an originating location for said remote data mirroring of said replicated data to said second remote network location.

24. The method of claim 22, wherein communication between said first network location to said first remote network location occurs in a first communications manner while communication between said first remote network location and said second remote network location occurs in a second communications manner.

25. The method of claim 24, wherein said first communications manner of comprises synchronous communications.

26. The method of claim 24, wherein said first communications manner comprises asynchronous communications.

27. The method of claim 24, wherein said second communications manner comprises synchronous communications.

28. The method of claim 24, wherein said second communication manner comprises asynchronous communications.

29. The method of claim 22, wherein communications from said first network location to said one or more remote locations occurs in the Transport Control Protocol/Internet Protocol (TCP/IP) protocol suite.

30. The method of claim 22, wherein said first network location and said one or more network locations operate without a volume management facility.

31. A method for replicating data from a first location to a plurality of remote locations, said method comprising the steps of:

replicating a selected data structure at said first location; and

transmitting said replicated data structure to a first of said plurality of remote locations for replication of said replicated data structure to a second of said plurality of remote locations.

32. The method of claim 31 further comprising the steps of,

replicating said replicated data structure at said first of said plurality of remote locations; and

transmitting said replication of said replicated data structure to said second of said plurality of remote locations.

33. The method of claim 31, wherein said first location communicates with said plurality of remote locations in the Transport Control Protocol/Internet Protocol (TCP/IP) protocol suite.

34. The method of claim 31, wherein said transmission of said replicated data structure to said first of said plurality of remote locations occurs at a first transmission rate.

35. The method of claim 32, wherein said transmission of said replication of said replicated data structure from said first of said plurality of remote locations to said second of said plurality of remote locations occurs at a second transmission rate.

36. The method of claim 31, wherein said first location comprises a workstation executing a first operating system.

37. The method of claim 31, wherein said first of said plurality of remote locations comprises a server executing a second operating system.

38. The method of claim 31, wherein said first location and said plurality of remote locations operate without a volume manager facility.

39. A computer readable medium holding computer executable instructions for replicating data from a first location to a plurality of remote locations, comprising the steps of:
replicating a first data structure at said first location; and

forwarding said replicated first data structure to a first of said plurality of remote locations for replication of said replicated first data structure to a second of said plurality of remote locations.

40. The computer readable medium of claim 39 further comprising the steps of:

replicating said replicated first data structure at said first of said plurality of remote locations; and

forwarding said replication of said replicated first data structure to said second of said plurality of remote locations.

41. The computer readable medium of claim 39, wherein said first location communicates with said plurality of remote locations in the Transport Control Protocol/Internet Protocol (TCP/IP) protocol suite.

42. The computer readable medium of claim 39, wherein said forwarding of said replicated first data structure to said first of said plurality of remote locations occurs at a first transmission rate.

43. The computer readable medium of claim 40, wherein said forwarding of said replication of said replicated first data structure from said first of said plurality of remote locations to said second of said plurality of remote locations occurs at a second transmission rate.

44. The computer readable medium of claim 39, wherein said first location comprises a workstation executing a first operating system.

45. The computer readable medium of claim 39, wherein said first of said plurality of remote locations comprises a server executing a second operating system.